

ACCELERATION

The rate of change of speed: $a = v/t$

Examples:

1. A merging car
2. Train pulling out of the station
3. Airplane taking off



In order for the jet to take off into the air, it must accelerate first.

Book Sentence:

We often use the word acceleration to describe situations in which the speed of an object is increasing.

Negative Acceleration:

When an object is slowing down.

Examples:

1. Stop Sign
2. Red light
3. Speed Bumps

When a car approaches a stop sign, it slows down. This is an example of negative acceleration.



Book Sentence:

Acceleration can be caused by positive change in speed or by negative change in speed.



AVERAGE SPEED!

Definition-

The average distance traveled per amount of time; distance divided by time it took to travel that distance.



During a road trip, you are going different speeds throughout the drive. For example if you went 180 miles in 3 hours, your average speed would be 60 mph.

Examples:

- 1.MPH(miles per hour)
- 2.Results of a NASCAR Race
- 3.Speed of a 100m sprint

Book Sentence:

Average speed is the total distance traveled divided by the time it takes to travel that distance.

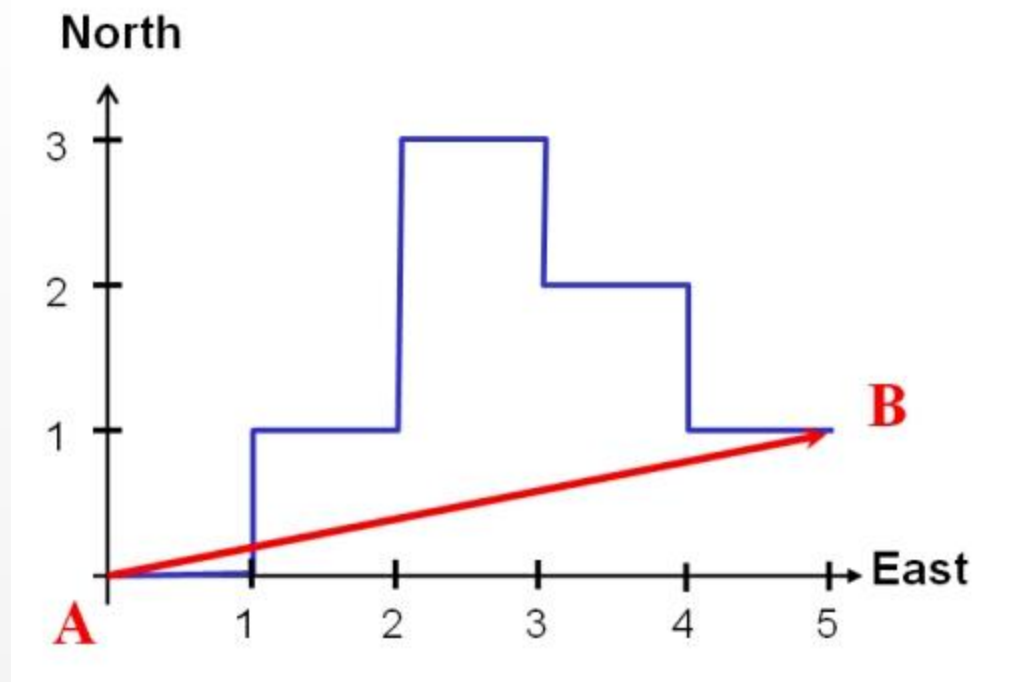
Displacement

Displacement: The distance in a straight line from the starting point to the end point. Not the distance .

Examples:

- The distance between the starting point and ending point of where water travelled.
- The direct path of electricity to the ground, not the path it took.

Direct path between two points on a map.



Distance is the Blue the Displacement is the red.

Book Sentence: When two or more displacement vectors have different directions they may be combined by graphing

Format
+ 2

RITAPEDIA EXAMPLE

Frame of Reference

Comparing an object that you *think* is moving
to an object that you *know is not* moving.

Your
Defintion
+ 3

Not Moving!

Examples:

3
Examples
+3

1. A window
2. The bank of a river
3. Polaris

Moving?



Pictoral
Def. + 3

I must see
the
connectio
n!

Book sentence:

Connection:

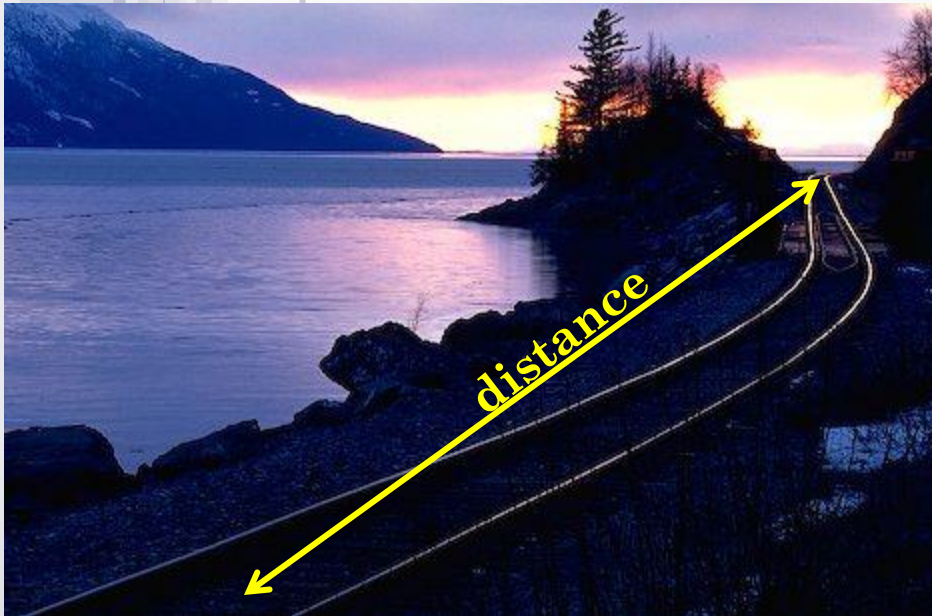
To describe motion
accurately, a Frame of
Reference is necessary

Book
Sentence
+ 4

Not a
definitio
n

DISTANCE

Definition: The extent or amount of space between two things, lines, or points.



Examples:

- Planets are separated by great distances.
- Rulers measure distance
- The distance from here to Ohio is 500 miles

Distance is when an object moves in a straight line , the distance is the length of line connecting the object's starting point and ending point.

INSTANTANEOUS SPEED

Definition: It's the speed at a particular moment in time.



Right now this car is going this fast?

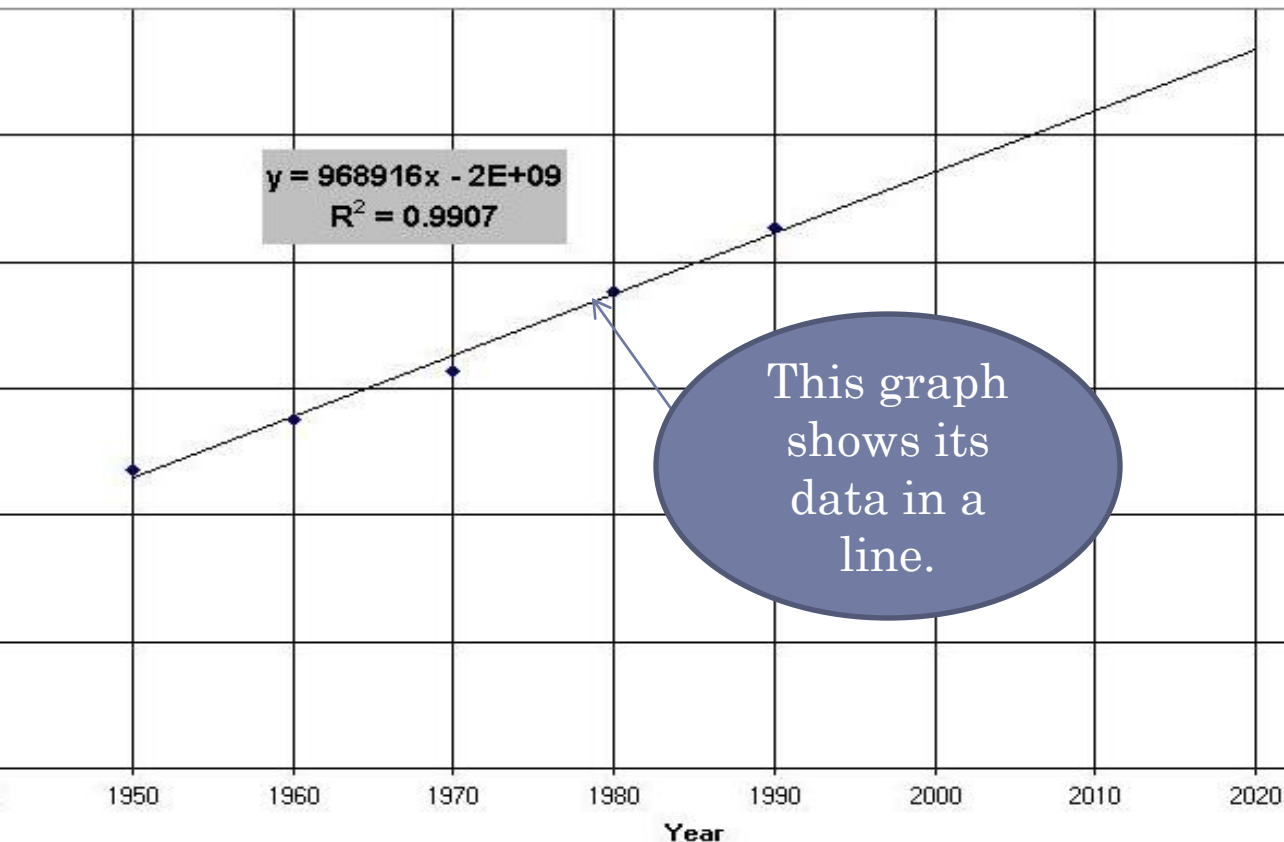
EXAMPLES:

1. Speedometer
2. When you see a speed trap
3. Slope of a graph

Book Sentence: The car's speedometer gives your Instantaneous speed.

LINEAR GRAPH

Population of Southern Region of the U.S.
Linear Model Projected to 2020



A graph which shows data in a straight line.

Examples:

1. The height of an object in inches compared with its height in centimeters.
2. Inserting a line of best fit into a scatter plot.
3. A graph that shows the projected amount of something using an equation.

Book sentence:

A linear graph is useful for showing changes that occur in related variables.

RELATIVE MOTION

- Relative Motion Definition: The movement in the frame of reference.

The North Star Polaris is a frame of reference, and the remaining stars move around it.



Examples of relative motion:

1. Tennis ball tossed inside a moving car.

2. Someone walking towards the back in a plane.

3. The Moon moving around the Earth.

SPEED

The act or state of moving rapidly, or very fast.

BOOK SENTENCE: SPEED IS THE RATIO OF THE DISTANCE AN OBJECT MOVES TO THE AMOUNT OF TIME THE OBJECT MOVE.

$$S = D/T$$



Examples:

Speed of light travels 670000000 mph.

Speed of Miguel is 18 mph.

Speed of the continents is 1 cm/year.

Velocity

Our Definition: The speed and direction of a moving object.

Book Sentence: To determine how long it will be before the cheetah reaches the antelope, you need to know the cheetah's velocity, not just its speed.

The background is blurred, therefore the cheetah is moving at a high speed.

Examples:

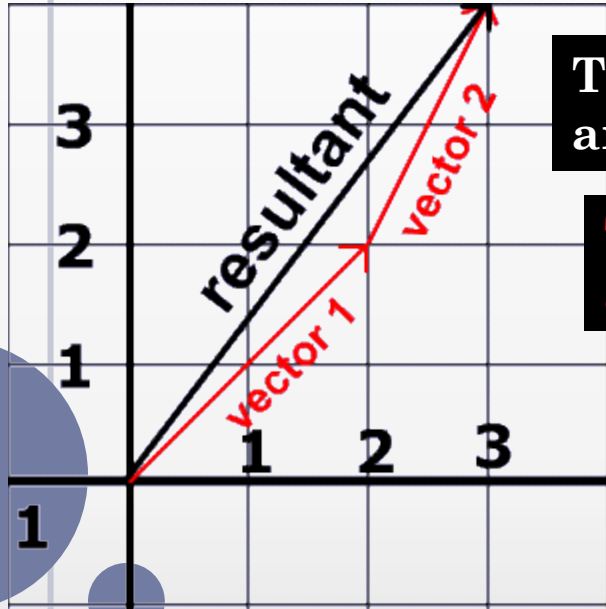
- airplane flying 300 km/hr south
- cheetah running 5 m/s east
- A slug chugging along at 1.5 m/hr west



If a person was facing north while looking at this cheetah, the cheetah would be traveling in an eastward **direction**.

VECTOR

- A SYMBOL USED TO REPRESENT VELOCITY. IT TELLS US HOW MUCH AND WHICH WAY.



The black vector is 18 long and is pointing N by NE

The red vectors are 8 long and directed up and right

Examples:

- Velocity
- Acceleration
- Time

BOOK SENTENCE: A VECTOR IS A QUANTITY THAT HAS MAGNITUDE AND DIRECTION.